

## WHAT IS CLAIMED IS:

1. A method for changing over to a different frequency at a cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and a base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

said second base station communicates with said mobile communication terminal by setting a channel using a second frequency,

and

said mobile communication terminal is controlled to measure first reception quality in said first frequency during the communication with said first base station by setting a channel, and also

said mobile communication terminal is controlled to measure second reception quality in said second frequency corresponding to said first reception quality during the communication with said first base station by setting the channel, and

said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station corresponding to said first and second reception quality, wherein:

said method for changing over to a different frequency, comprising the step of:

changing the condition of measuring said second reception quality corresponding to the traffic in said first frequency by said base station controlling apparatus.

2. A method for changing over to a different frequency in accordance with claim 1, further comprising the steps of:

changing first and second threshold values corresponding to said

traffic in said first frequency by said base station controlling apparatus;  
and

instructing said mobile communication terminal to measure said  
second reception quality by said base station controlling apparatus, when  
5 said first reception quality is less than said first threshold value.

3. A method for changing over to a different frequency at a  
cellular phone system, in which a mobile communication terminal, a first  
base station and a second base station, and a base station controlling  
10 apparatus are provided, wherein:

said first base station communicates with said mobile  
communication terminal by setting a channel using a first frequency, and

said second base station communicates with said mobile  
communication terminal by setting a channel using a second frequency,  
15 and

said mobile communication terminal is controlled to measure  
first reception quality in said first frequency and second reception quality  
in said second frequency during the communication with said first base  
station by setting a channel, and

20 said mobile communication terminal is controlled to  
communicate with said second base station by changing over the channel  
from said first base station to said second base station when the difference  
between said second reception quality and said first reception quality  
exceeded a third threshold value, wherein:

25 said method for changing over to a different frequency,  
comprising the steps of:

measuring the traffic in said first frequency by said base station  
controlling apparatus; and

changing said third threshold value corresponding to said  
30 measured traffic by said base station controlling apparatus.

4. A method for changing over to a different frequency in accordance with claim 1, or 3, further comprising the step of:

controlling said mobile communication terminal not to measure  
5 said second reception quality by said base station controlling apparatus in case that said traffic is less than a specific value.

5. A method for changing over to a different frequency at a cellular phone system, in which a mobile communication terminal, a first  
10 base station and a second base station, and a base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

said second base station communicates with said mobile  
15 communication terminal by setting a channel using a second frequency, and

said mobile communication terminal is controlled to measure second reception quality in said second frequency during the communication with said first base station by setting a channel, and

20 said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station when said second reception quality exceeded a fourth threshold value, wherein:

said method for changing over to a different frequency,  
25 comprising the steps of:

measuring the traffic in said first frequency by said base station controlling apparatus; and

changing said fourth threshold value corresponding to said measured traffic by said base station controlling apparatus.

6. A method for changing over to a different frequency in accordance with claim 5, further comprising the step of:

controlling said mobile communication terminal to communicate with said second base station by changing over the channel from said first base station to said second base station in case that said measured traffic exceeded a designated threshold value by said base station controlling apparatus.

7. A method for changing over to a different frequency at a cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and a base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and  
said second base station communicates with said mobile communication terminal by setting a channel using a second frequency, and

said mobile communication terminal is controlled to measure first reception quality in said first frequency during the communication with said first base station by setting a channel, and also

said mobile communication terminal is controlled to measure second reception quality in said second frequency corresponding to said first reception quality during the communication with said first base station by setting the channel, and

said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station corresponding to said first and second reception quality, wherein:

said method for changing over to a different frequency, comprising the step of:

changing the condition of measuring said second reception quality corresponding to the transmission rate in said mobile communication terminal by said base station controlling apparatus.

5           8. A method for changing over to a different frequency in accordance with claim 7, further comprising the steps of:

changing first and second threshold values corresponding to said transmission rate in said mobile communication terminal by said base station controlling apparatus; and

10           instructing said mobile communication terminal to measure said second reception quality by said base station controlling apparatus, when said first reception quality is less than said first threshold value.

9. A method for changing over to a different frequency at a  
15 cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and a base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

20           said second base station communicates with said mobile communication terminal by setting a channel using a second frequency, and

said mobile communication terminal is controlled to measure first reception quality in said first frequency and second reception quality  
25 in said second frequency during the communication with said first base station by setting a channel, and

said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station when the difference  
30 between said second reception quality and said first reception quality

exceeded a third threshold value, wherein:

said method for changing over to a different frequency, comprising the step of:

changing said third threshold value corresponding to said  
5 transmission rate in said mobile communication terminal by said base station controlling apparatus.

10. A method for changing over to a different frequency at a cellular phone system, in which a mobile communication terminal, a first  
10 base station and a second base station, and a base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

said second base station communicates with said mobile  
15 communication terminal by setting a channel using a second frequency, and

said mobile communication terminal is controlled to measure second reception quality in said second frequency during the communication with said first base station by setting a channel, and

20 said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station when said second reception quality exceeded a fourth threshold value, wherein:

said method for changing over to a different frequency, comprising the step of:

changing said fourth threshold value corresponding to said transmission rate in said mobile communication terminal by said base station controlling apparatus.

30 11. A method for changing over to a different frequency in

accordance with claim 1, 3, 5, 7, 9, or 10, wherein:

said first base station transmits a first broadcast channel and  
said second base station transmits a second broadcast channel, and

said first reception quality is reception quality in said first  
5 broadcast channel and said second reception quality is reception quality in  
said second broadcast channel.

12. A method for changing over to a different frequency in  
accordance with claim 1, 3, 5, 7, 9, or 10, further comprising the steps of:

10 making a data vacant time in which data are not transmitted by  
compressing transmitting data in the time by said first base station; and

measuring said second reception quality in said data vacant time  
by said mobile communication terminal.

15 13. A cellular phone system, in which a mobile communication  
terminal, a first base station and a second base station, and a base station  
controlling apparatus are provided, wherein:

said first base station communicates with said mobile  
communication terminal by setting a channel using a first frequency, and

20 said second base station communicates with said mobile  
communication terminal by setting a channel using a second frequency,  
and

said mobile communication terminal is controlled to measure  
first reception quality in said first frequency during the communication  
25 with said first base station by setting a channel, and also

said mobile communication terminal is controlled to measure  
second reception quality in said second frequency corresponding to said  
first reception quality during the communication with said first base  
station by setting the channel, and

30 said mobile communication terminal is controlled to

communicate with said second base station by changing over the channel from said first base station to said second base station corresponding to said first and second reception quality, wherein:

said base station controlling apparatus, comprising:

5 a condition changing means for changing the condition of measuring said second reception quality corresponding to the traffic in said first frequency.

10 14. A cellular phone system in accordance with claim 13, wherein:

said base station controlling apparatus, further comprising:

a first threshold value changing means for changing first and second threshold values corresponding to said traffic in said first frequency; and

15 an instructing means for instructing said mobile communication terminal to measure said second reception quality, when said first reception quality is less than said first threshold value.

20 15. A cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and a base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency; and

25 said second base station communicates with said mobile communication terminal by setting a channel using a second frequency, and

said mobile communication terminal is controlled to measure first reception quality in said first frequency and second reception quality in said second frequency during the communication with said first base station by setting a channel, and

30



said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station when the difference between said second reception quality and said first reception quality exceeded a third threshold value, wherein:

said base station controlling apparatus, comprising:

a traffic measuring means for measuring the traffic in said first frequency; and

a second threshold value changing means for changing said third threshold value corresponding to said measured traffic.

16. A cellular phone system in accordance with claim 13, or 15, wherein:

said base station controlling apparatus, further comprising:

a first controlling means for controlling said mobile communication terminal not to measure said second reception quality in case that said traffic is less than a specific value.

17. A cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and a base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

said second base station communicates with said mobile communication terminal by setting a channel using a second frequency, and

said mobile communication terminal is controlled to measure second reception quality in said second frequency during the communication with said first base station by setting a channel, and

said mobile communication terminal is controlled to

communicate with said second base station by changing over the channel from said first base station to said second base station when said second reception quality exceeded a fourth threshold value, wherein:

said base station controlling apparatus, comprising:

5 a traffic measuring means for measuring the traffic in said first frequency; and

a third threshold value changing means for changing said fourth threshold value corresponding to said measured traffic.

10 18. A cellular phone system in accordance with claim 17, wherein:

said base station controlling apparatus, further comprising:

15 a second controlling means for controlling said mobile communication terminal to communicate with said second base station by changing over the channel from said first base station to said second base station in case that said measured traffic exceeded a designated threshold value.

20 19. A cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and a base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

25 said second base station communicates with said mobile communication terminal by setting a channel using a second frequency, and

said mobile communication terminal is controlled to measure first reception quality in said first frequency during the communication with said first base station by setting a channel, and also

30 said mobile communication terminal is controlled to measure

second reception quality in said second frequency corresponding to said first reception quality during the communication with said first base station by setting the channel, and

5       said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station corresponding to said first and second reception quality, wherein:

      said base station controlling apparatus, comprising:

10       a condition changing means for changing the condition of measuring said second reception quality corresponding to the transmission rate in said mobile communication terminal.

20.   A cellular phone system in accordance with claim 19, wherein:

15       said base station controlling apparatus, further comprising:

      a first threshold value changing means for changing first and second threshold values corresponding to said transmission rate in said mobile communication terminal; and

20       an instructing means for instructing said mobile communication terminal to measure said second reception quality, when said first reception quality is less than said first threshold value.

21.   A cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and a base station  
25       controlling apparatus are provided, wherein:

      said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

      said second base station communicates with said mobile communication terminal by setting a channel using a second frequency,  
30       and

said mobile communication terminal is controlled to measure first reception quality in said first frequency and second reception quality in said second frequency during the communication with said first base station by setting a channel, and

5        said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station when the difference between said second reception quality and said first reception quality exceeded a third threshold value, wherein:

10        said base station controlling apparatus, comprising:

a second threshold value changing means for changing said third threshold value corresponding to said transmission rate in said mobile communication terminal.

15        22. A cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and a base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

20        said second base station communicates with said mobile communication terminal by setting a channel using a second frequency, and

25        said mobile communication terminal is controlled to measure second reception quality in said second frequency during the communication with said first base station by setting a channel, and

said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station when said second reception quality exceeded a fourth threshold value, wherein:

30        said base station controlling apparatus, comprising:

a third threshold value changing means for changing said fourth threshold value corresponding to said transmission rate in said mobile communication terminal.

5           23. A cellular phone system in accordance with claim 13, 15, 17, 19, 21, or 22, wherein:

said first base station transmits a first broadcast channel and said second base station transmits a second broadcast channel, and

10           said first reception quality is reception quality in said first broadcast channel and said second reception quality is reception quality in said second broadcast channel.

24. A cellular phone system in accordance with claim 13, 15, 17, 19, 21, or 22, wherein:

15           said first base station, comprising:

a data vacant time making means for making a data vacant time in which data are not transmitted by compressing transmitting data in the time; and

said mobile communication terminal, comprising:

20           a measuring means for measuring said second reception quality in said data vacant time.

25           25. A base station controlling apparatus in a cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and said base station controlling apparatus are provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

30           said second base station communicates with said mobile communication terminal by setting a channel using a second frequency,

and

said mobile communication terminal is controlled to measure first reception quality in said first frequency during the communication with said first base station by setting a channel, and also

5        said mobile communication terminal is controlled to measure second reception quality in said second frequency corresponding to said first reception quality during the communication with said first base station by setting the channel, and

10        said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station corresponding to said first and second reception quality, wherein:

said base station controlling apparatus, comprising:

15        a condition changing means for changing the condition of measuring said second reception quality corresponding to the traffic in said first frequency.

26. A base station controlling apparatus in accordance with claim 25, further comprising:

20        a first threshold value changing means for changing first and second threshold values corresponding to said traffic in said first frequency; and

25        an instructing means for instructing said mobile communication terminal to measure said second reception quality, when said first reception quality is less than said first threshold value.

27. A base station controlling apparatus in a cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and said base station controlling apparatus are  
30        provided, wherein:

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

said second base station communicates with said mobile communication terminal by setting a channel using a second frequency,

5 and

said mobile communication terminal is controlled to measure first reception quality in said first frequency and second reception quality in said second frequency during the communication with said first base station by setting a channel, and

10 said mobile communication terminal is controlled to communicate with said second base station by changing over the channel from said first base station to said second base station when the difference between said second reception quality and said first reception quality exceeded a third threshold value, wherein:

15 said base station controlling apparatus, comprising:

a traffic measuring means for measuring the traffic in said first frequency; and

a second threshold value changing means for changing said third threshold value corresponding to said measured traffic.

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28. A base station controlling apparatus in accordance with claim 25, or 27, further comprising:

a first controlling means for controlling said mobile communication terminal not to measure said second reception quality in case that said traffic is less than a specific value.

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29. A base station controlling apparatus in a cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and said base station controlling apparatus are provided, wherein:

30

said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

said second base station communicates with said mobile communication terminal by setting a channel using a second frequency,

5 and

said mobile communication terminal is controlled to measure second reception quality in said second frequency during the communication with said first base station by setting a channel, and

said mobile communication terminal is controlled to  
10 communicate with said second base station by changing over the channel from said first base station to said second base station when said second reception quality exceeded a fourth threshold value, wherein:

said base station controlling apparatus, comprising:

a traffic measuring means for measuring the traffic in said first  
15 frequency; and

a third threshold value changing means for changing said fourth threshold value corresponding to said measured traffic.

30. A base station controlling apparatus in accordance with  
20 claim 29, further comprising:

a second controlling means for controlling said mobile communication terminal to communicate with said second base station by changing over the channel from said first base station to said second base station in case that said measured traffic exceeded a designated threshold  
25 value.

31. A base station controlling apparatus in a cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and said base station controlling apparatus are  
30 provided, wherein:



said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

said second base station communicates with said mobile communication terminal by setting a channel using a second frequency,

5 and

said mobile communication terminal is controlled to measure first reception quality in said first frequency during the communication with said first base station by setting a channel, and also

said mobile communication terminal is controlled to measure  
10 second reception quality in said second frequency corresponding to said first reception quality during the communication with said first base station by setting the channel, and

said mobile communication terminal is controlled to communicate with said second base station by changing over the channel  
15 from said first base station to said second base station corresponding to said first and second reception quality, wherein:

said base station controlling apparatus, comprising:

a condition changing means for changing the condition of measuring said second reception quality corresponding to the transmission  
20 rate in said mobile communication terminal.

32. A base station controlling apparatus in accordance with claim 31, further comprising:

a first threshold value changing means for changing first and  
25 second threshold values corresponding to said transmission rate in said mobile communication terminal; and

an instructing means for instructing said mobile communication terminal to measure said second reception quality, when said first reception quality is less than said first threshold value.

33. A base station controlling apparatus in a cellular phone system, in which a mobile communication terminal, a first base station and a second base station, and said base station controlling apparatus are provided, wherein:

5           said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

          said second base station communicates with said mobile communication terminal by setting a channel using a second frequency, and

10          said mobile communication terminal is controlled to measure first reception quality in said first frequency and second reception quality in said second frequency during the communication with said first base station by setting a channel, and

          said mobile communication terminal is controlled to  
15       communicate with said second base station by changing over the channel from said first base station to said second base station when the difference between said second reception quality and said first reception quality exceeded a third threshold value, wherein:

          said base station controlling apparatus, comprising:

20          a second threshold value changing means for changing said third threshold value corresponding to said transmission rate in said mobile communication terminal.

34. A base station controlling apparatus in a cellular phone  
25       system, in which a mobile communication terminal, a first base station and a second base station, and said base station controlling apparatus are provided, wherein:

          said first base station communicates with said mobile communication terminal by setting a channel using a first frequency, and

30          said second base station communicates with said mobile

communication terminal by setting a channel using a second frequency,  
and

said mobile communication terminal is controlled to measure  
second reception quality in said second frequency during the  
5 communication with said first base station by setting a channel, and

said mobile communication terminal is controlled to  
communicate with said second base station by changing over the channel  
from said first base station to said second base station when said second  
reception quality exceeded a fourth threshold value, wherein:

10 said base station controlling apparatus, comprising:

a third threshold value changing means for changing said fourth  
threshold value corresponding to said transmission rate in said mobile  
communication terminal.

15 35. A base station controlling apparatus in accordance with  
claim 25, 27, 29, 31, 32, or 34, wherein:

said first base station transmits a first broadcast channel and  
said second base station transmits a second broadcast channel, and

20 said first reception quality is reception quality in said first  
broadcast channel and said second reception quality is reception quality in  
said second broadcast channel.